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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MOTOROLA INC
600 NORTH US HIGHWAY 45
ROOM AS437
LIBERTYVILLE, IL 60048-5343

EXAMINER

ADDY, ANTHONY S

ART UNIT PAPER NUMBER

2617

DATE MAILED: 12/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/626,184

Applicant(s)

WELNICK ET AL.

Examiner

Anthony S. Addy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to applicant's amendment filed on September 21, 2006. **Claims 1-13 and 17-19** are pending in the present application.

Response to Arguments

2. Applicant's arguments with respect to **claims 1-13 and 17-19** filed on October 02, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that, "Joshi is silent on how quickly signals are added to the active set (see page 8, first paragraph of the response)," by arguing that, in Joshi the number of signals in the active set relates only to the criticality of the need for off-frequency searching; not to the criticality of adding signals to the active set (see page 8, first paragraph of the response), examiner respectfully disagrees and maintains that Joshi meets the limitations as claimed. Examiner reiterates that Joshi teaches the mobile station as illustrated in Figure 9, step 903, asks whether a count of base stations in the active set 702 (Fig. 7) exceeds a prescribed number (N_a), for example "one" (see p. 5 [0065]); and if there is a sufficient number of active set base stations, then off-frequency searching is **not as critical** as with an under-populated active set where off-frequency searching is **critical** (see p. [0065]). Thus it is clear from the teachings of Joshi that, **the criticality** of performing an off-frequency search is related to how quickly signals are added to the active set, since Joshi explicitly teaches that when a count of base stations in the active set 702 is below a prescribed number (N_a) [i.e. an under-populated active set], off-frequency searching is **critical**, meaning

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the mobile station would quickly search for neighbor base stations and place them in the candidate set 704 if their measured pilots signal exceeds a given strength and which are eventually promoted to the active set 702; or promote a base station from the mobile's candidate set 704 to its active set when the mobile station finds that this base station's pilot signal energy exceeds a given strength (see p. 5 [0059]). Thus it is clear Joshi meets allocating signals to the active set more or less quickly based on the number of signals in the active set.

Furthermore, the examiner respectfully maintains that the teachings of Krause were cited to specifically reinforce the teachings of how quickly signals are added to the active set as taught by Joshi, since Krause teaches a need for a mobile station to quickly determine which neighbor pilots to promote to the candidate set to ensure that the strongest pilots will remain in the active set, in order to significantly improve the mobile's performance in a rapidly changing environment by maintaining the pilot set in such a manner that the strong pilots are quickly determined and promoted to the candidate set (see Krause, col. 2, lines 40-56). Thus it is clear Krause in combination with Joshi reinforces allocating signals to the active set more or less quickly based on the number of signals in the active set.

In response to applicant's argument that, "Joshi and Krause are nevertheless silent on the number of scanning periods over which the criteria for allocating signals to the candidate set is considered (see page 9, third paragraph of the response) and dynamically changing the signal allocation criteria based on either a number of signals in an active signal set or on a signal quality of a strongest signal in the active signal set

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(see page 10, third paragraph of the response),” examiner respectfully disagrees and maintains that Joshi meets the limitations as claimed. Examiner respectfully reiterates that based on the teachings of Joshi discussed above, that when a count of base stations in the active set 702 is below a prescribed number (N_a) [i.e. an under-populated active set], off-frequency searching is **critical**, meaning the mobile station would **quickly** search for neighbor base stations and place them in the candidate set 704 if their measured pilots signal exceeds a given strength, which implicitly meets allocating signals to the candidate set using criteria considered over fewer scanning periods. Moreover, and based on the teachings of Joshi that, when a count of base stations in the active set 702 exceeds a prescribed number (N_a), off-frequency searching is **not as critical**, meaning the mobile station would **slowly** search for neighbor base stations and place them in the candidate set 704, which implicitly meets allocating signals to the candidate set using criteria considered over more than one (i.e. a longer) scanning period, which in combination with the teachings explained above, shows Joshi and Krause meets dynamically changing the signal allocation criteria based on either a number of signals in an active signal set or on a signal quality of a strongest signal in the active signal set.

In view of the above the rejections using Joshi and Krause are proper and are maintained as repeated below. These rejections are made **FINAL**.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. **Claims 1-13 and 17-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Joshi et al., U.S. Publication Number 2004/0203838 A1 (hereinafter Joshi)**, and further in view of **Krause et al., U.S. Patent Number 6,160,799 (hereinafter Krause)**.

Regarding claims 1, 4 and 5, Joshi teaches a method in a wireless communications device that allocates neighbor signals to a candidate set (see p. 4 [0055-0056], p. 5 [0059] and Fig. 9), the method comprising: determining a number of signals in an active set (see p. 5 [0065-0066]); allocating signals to the candidate set more quickly when the number of signals in the active set is less than a threshold number than when the number of signals in the active set is greater than the threshold number (see p. 5 [0059 & 0065-0070] [i.e. The teaching of Joshi that, mobile station asks whether a count of base stations in the active set exceeds a prescribed number (Na), for example, the number "one" and if there is a sufficient number of active set base stations, then off-frequency searching is ***not as critical*** as with an under-populated active set, in combination with the teaching of Joshi that, after on-frequency and off-frequency searching the mobile station may promote a base station from the mobile station's non-candidate neighbor set to its candidate set, broadly reads on the limitations "allocating signals to the candidate set more quickly when the number of signals in the active set is less than a threshold number than when the number of

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signals in the active set is greater than the threshold number” since Joshi teaches if off-frequency searching is necessary, i.e., when there is an under-populated active set, the mobile station finds off-frequency searching to be **critical**, therefore would promote a base station from the mobile station's non-candidate neighbor set to its candidate set quickly to avoid lost communications or drop calls]).

Moreover, in an analogous field of endeavor, Krause teaches a method and apparatus for maintaining the pilot set of a wireless communication device, such as a portable radiotelephone operating in a CDMA system, wherein the method and apparatus significantly improves the device's performance in a rapidly changing environment by quickly and reliably determining and promoting strong neighbor pilots to the candidate set (see col. 2, line 66 through col. 3, line 5). According to Krause, if the mobile station is not able to promote the new strong neighbor pilots to the candidate set quickly enough, i.e., before communication on the active pilots is lost, then the call will drop, thus a need therefore exists in a rapidly changing mobile environment to maintain the pilot set in such a manner that the strong pilots are quickly determined and promoted to the candidate set (see col. 2, lines 40-56).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Krause with the method of Joshi to reliably and quickly allocate strong pilots to the candidate set in a rapidly changing mobile environment, in order to avoid drop calls or lost communications on the active pilots as taught by Krause (see col. 2, lines 40-56 and col. 3, lines 1-5).

Regarding claims 2 and 3, Joshi in view of Krause teaches all the limitations of claim 1. The combination of Joshi and Krause fails to explicitly teach allocating signals to the candidate set includes delaying the allocation of signals to the candidate set for a first delay interval when the number of signals in the active set is less than the threshold number, delaying the allocation of signals to the candidate set for a second delay interval when the number of signals in the active set is greater than the threshold number, and delaying the allocation of signals to the candidate set for the first delay interval includes immediately promoting signals to the candidate set when a strongest of the active signals does not meet a signal quality threshold, wherein the first delay interval is less than the second delay interval.

However, one of ordinary skill in the art further recognizes that based on the teaching of Joshi that the mobile station asks whether a count of base stations in the active set exceeds a prescribed number (N_a), for example, the number "one" and if there is a sufficient number of active set base stations, then off-frequency searching is ***not as critical*** as with an under-populated active set, in combination with the teaching of Joshi that, after on-frequency and off-frequency searching the mobile station may promote a base station from the mobile station's non-candidate neighbor set to its candidate set, it is obvious when the number of signals in the active set is less than the threshold number [i.e. an under-populated active set], allocating signals to candidate set includes delaying the allocation of signals to the candidate set for a first delay interval, since Joshi teaches if off-frequency searching is ***critical***, i.e., when a count of base stations in the active set is below a prescribed number, the mobile station will consider

base stations from the mobile station's non-candidate neighbor set at a faster rate [i.e. constitutes a first delay interval] compared to when a count of base stations in the active set exceeds a prescribed number when off-frequency searching is **not as critical**, the mobile station will search base stations from the mobile station's non-candidate neighbor set at a slower rate [i.e. constitutes a second delay interval] since the active pilots in the active set exceeds a prescribed number and can be used by the mobile station for communication (see p. 5 [0059 & 0065-0070]). Furthermore, it is obvious the first delay interval is less than the second delay interval, since when frequency searching is **critical**, the mobile station will consider base stations from the mobile station's non-candidate neighbor set at a faster rate compared to when off-frequency searching is **not as critical**, the mobile station will search base stations from the mobile station's non-candidate neighbor set at a slower rate.

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Joshi and Krause, wherein allocating signals to the candidate set includes delaying the allocation of signals to the candidate set for a first delay interval when the number of signals in the active set is less than the threshold number, and delaying the allocation of signals to the candidate set for a second delay interval when the number of signals in the active set is greater than the threshold number, wherein the first delay interval is less than the second delay interval, in order to reliably and quickly allocate strong pilots to the candidate set in a rapidly changing mobile environment, to avoid drop calls or lost communications on the active pilots.

Regarding claim 7, Joshi in view of Krause teaches all the limitations of claim 1. Joshi further teaches allocating neighboring signals to the candidate set based on signal promotion criteria (see p. 5 [0059]), allocating signals to the candidate set when the number of signals in the active set is less than the threshold number based on consideration of signal promotion criteria for not more than one scanning period (see p. 5 [0059 & 0065-0070]).

Regarding claim 8, Joshi in view of Krause teaches all the limitations of claim 1. In addition, Joshi teaches allocating signals to the candidate from a pre-candidate set (see p. 5 [0059]).

Regarding claims 9, 10, 11, 12 and 17, Joshi teaches a method in a wireless communications device that allocates neighbor signals to a candidate set based on criteria considered over at least one scanning period (see p. 4 [0055-0056], p. 5 [0059] and Fig. 9), the method comprising: determining a number of signals in an active set (see p. 5 [0065-0066]); when the number of signals in the active set is greater than a threshold number, allocating neighbor signals to the candidate set using criteria considered over more than one scanning period (see p. 5 [0059 & 0065-0070]) [i.e. The teaching of Joshi that, mobile station asks whether a count of base stations in the active set exceeds a prescribed number (N_a), for example, the number "one" and if there is a sufficient number of active set base stations, then off-frequency searching is **not as critical** as with an under-populated active set, in combination with the teaching of Joshi that, after on-frequency and off-frequency searching the mobile station may promote a base station from the mobile station's non-candidate neighbor set to its candidate set,

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broadly reads on the limitation “when the number of signals in the active set is greater than a threshold number, allocating neighbor signals to the candidate set using criteria considered over more than one scanning period” since if off-frequency is **not as critical**, i.e., when a count of base stations in the active set exceeds a prescribed number, the mobile station will consider more base stations from the mobile station’s non-candidate neighbor set, thus perform a slower search considering more than one base station from the mobile stations non-candidate neighbor set]); when the number of signals in the active set is less than the threshold number, allocating neighbor signals to the candidate set using criteria considered over fewer scanning periods than when the number of signals in the active set is greater than the threshold number (see p. 5 [0059 & 0065-0070] [i.e. The teaching of Joshi that, mobile station asks whether a count of base stations in the active set exceeds a prescribed number (N_a), for example, the number “one” and if there is a sufficient number of active set base stations, then off-frequency searching is **not as critical** as with an under-populated active set, in combination with the teaching of Joshi that, after on-frequency and off-frequency searching the mobile station may promote a base station from the mobile station’s non-candidate neighbor set to its candidate set, broadly reads on the limitation “when the number of signals in the active set is less than the threshold number, allocating neighbor signals to the candidate set using criteria considered over fewer scanning periods than when the number of signals in the active set is greater than the threshold number” since if off-frequency is **critical**, i.e., when a count of base stations in the active set is below a prescribed number, the mobile station will consider more base

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stations from the mobile station's non-candidate neighbor set faster than when a count of base stations in the active set exceeds a prescribed number, thus performing a faster search over fewer scanning periods to consider a base station with a stronger pilot from the mobile stations non-candidate neighbor set to prevent a drop call or lost communication]).

Moreover, in an analogous field of endeavor, Krause teaches a method and apparatus for maintaining the pilot set of a wireless communication device, such as a portable radiotelephone operating in a CDMA system, wherein the method and apparatus significantly improves the device's performance in a rapidly changing environment by quickly and reliably determining and promoting strong neighbor pilots to the candidate set (see col. 2, line 66 through col. 3, line 5). According to Krause, if the mobile station is not able to promote the new strong neighbor pilots to the candidate set quickly enough, i.e., before communication on the active pilots is lost, then the call will drop, thus a need therefore exists in a rapidly changing mobile environment to maintain the pilot set in such a manner that the strong pilots are quickly determined and promoted to the candidate set (see col. 2, lines 40-56).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Krause with the method of Joshi to reliably and quickly allocate strong pilots to the candidate set in a rapidly changing mobile environment, in order to avoid drop calls or lost communications on the active pilots as taught by Krause (see col. 2, lines 40-56 and col. 3, lines 1-5).

Regarding claims 6 and 13, Joshi in view of Krause teaches all the limitations of claims 1 and 9. Joshi further teaches allocating signals to the candidate set using criteria considered over fewer scanning periods only when the number of signals in the active set is less than the threshold number (see p. 5 [0059 & 0065-0070] and claim 9 as addressed above).

Joshi fails to explicitly teach the signals in the active set are assigned to fingers of a rake receiver. However, the use of a rake receiver is very well in the art and implemented in CDMA systems to search for stronger pilot signals to ensure the continuation of a cellular communication connection as taught for example by Krause.

In an analogous field of endeavor, Krause teaches a method and apparatus for maintaining the pilot set of a wireless communication device, such as a portable radiotelephone operating in a CDMA system, wherein the method and apparatus significantly improves the device's performance in a rapidly changing environment by quickly and reliably determining and promoting strong neighbor pilots to the candidate set and wherein the signals in the active set are assigned to fingers of a rake receiver (see col. 2, line 66 through col. 3, line 5 and col. 3, lines 41-55 and Fig. 1).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Joshi with Krause to include a rake receiver, in order to reliably and quickly allocate strong pilots to the candidate set in a rapidly changing mobile environment, to avoid drop calls or lost communications on the active pilots as taught by Krause (see col. 2, lines 40-56 and col. 3, lines 1-5).

Regarding claim 18 and 19, Joshi in view of Krause teaches all the limitations of claim 17. Joshi further teaches operating the communications device in soft handoff with the signals in the active set (see p. 5 [0064]), dynamically changing the signal allocation criteria when the number of signals in the signal strength of the strongest signal in the active set changes relative to a signal strength threshold (see p. 5 [0064-0070]).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony S. Addy whose telephone number is 571-272-7795. The examiner can normally be reached on Mon-Thur 8:00am-6:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc M. Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A.S.A


DUC M. NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600